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ABSTRACT

The relationship between job performance and job satisfaction was evaluated using a longitudinal model. During the winter quarter of 1987, approximately 2,000 students at the University of Tennessee (Knoxville) received a student satisfaction survey designed to measure student opinions about programs and services at the university and department levels as well as classroom experiences. The response rate was 63%. During the 1987-88 academic year, slightly more than 1,800 seniors took a required test of general educational knowledge and skills. A total of 314 students had completed both the student satisfaction survey as juniors in 1987 and the senior survey in 1988. The combined data were then matched with student records to obtain additional data on students' pre-college characteristics (American College Test scores, grade point average, gender, and race). Results indicate that a substantial proportion of the association between performance and satisfaction is an artifact of other variables. The results indicate that satisfaction has a greater influence on performance than performance has on satisfaction. This finding runs counter to theories and research about work performance and satisfaction and also calls into question the causal ordering of many of the models used to explain student attrition and persistence. (TJH)

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The Performance-Satisfaction Relationship Revisited: Specification and Testing of a Theoretical Model

by

Gary Pike

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THE PERFORMANCE-SATISFACTION RELATIONSHIP REVISITED: SPECIFICATION AND TESTING OF A THEORETICAL MODEL

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Abstract

The relationship between job performance and job satisfaction has been the object of extensive business and organizational research during the past 40 years. Similarly, a substantial amount of the research in higher education is concerned with the effects of satisfaction and performance, particularly as they relate to student attrition. Despite the prominence of these variables, little is known about the relationship between them. The purpose of this research is to evaluate that relationship using a longitudinal model. Results of the analyses indicate that a substantial proportion of the association between performance and satisfaction is an artifact of other variables. Of that part of the relationship that is unique to them, results indicate that satisfaction has a greater influence on performance than performance has on satisfaction. This last result is counter to theories and research about work performance and satisfaction and also calls into question the causal ordering of many of the models used to explain student attrition and persistence. Much research remains to be done to determine the exact nature of the relationship between performance and satisfaction.

THE PERFORMANCE-SATISFACTION RELATIONSHIP REVISITED: SPECIFICATION AND TESTING OF A THEORETICAL MODEL

The relationship between workers' job performance and their job satisfaction has been the object of extensive research during the past 40 years (Bernardin & Beatty, 1984; Organ, 1977; Schwab & Cummings, 1970). This increased interest has been fueled by the twin concerns of individual well-being and organizational productivity as reflected in the problems associated with high rates of employee turnover (Jackofsky, 1984; Mobley, Griffeth, Hand, & Meglino, 1979).

Similarly, a substantial amount of the research in higher education is concerned with the adverse individual and institutional consequences of student attrition, and this research has made extensive use of performance and satisfaction measures (Aitken, 1982; Donovan, 1984; Morstain, 1977; Pascarella, Smart, & Ethington, 1986; Stordahl, 1970; Terenzini & Pascarella, 1977). Indeed, several studies of student attrition have drawn from theories of worker turnover for their models (Bean, 1980; Star, Betz, & Menne, 1972). While performance and satisfaction occupy a prominent position in theories of student attrition, relatively little research has been conducted on the relationship between these variables (Bean & Bradley, 1986; Morstain, 1977).

The purpose of this paper is to develop a model for evaluating the relationship between academic performance and student satisfaction, and then to use this model in research designed to clarify the performance-satisfaction relationship in higher education. Because performance and satisfaction do not exist in a vacuum, the model and the research presented in this paper seek to link these variables to students' precollege characteristics and their educational experiences.

A Model of the Performance-Satisfaction Relationship

Human relations theories, like those of Vroom (1964) and Herzberg, Mauser, and Snyderman (1959), argue that employee satisfaction leads to improved job performance. In effect, these theories assume that employees' positive feelings about their jobs cause them to work harder and to be more productive. While research consistently has found performance and satisfaction to be positively correlated, empirical support for the satisfaction-causes-performance hypothesis has not been forthcoming (Brayfield & Crockett, 1955; Organ, 1977; Schwab & Cummings, 1970).

Lawler and Porter (1967) have suggested an alternative model in which performance causes satisfaction. According to their model, improved performance will lead to enhanced satisfaction when that performance is directly rewarded. Satisfaction can exert a reciprocal influence on performance only when it influences the value of the rewards received. Here again, correlational research does not provide unequivocal support for the Porter-Lawler model. For example, while Slocum (1970) reports that performance and satisfaction are positively correlated, he concludes that although this result supports the Porter-Lawler model, it would support a variety of other models as well.

Siegel and Bowen (1971) argue that much of the research on the performance-satisfaction relationship should not be used to infer causality because it is correlational and measures performance and satisfaction at the same point in time. In order to overcome these limitations, they conducted a longitudinal study measuring performance and satisfaction at two points in time. Using cross-lagged correlations, these researchers found that although satis-

faction at the earlier point in time (T_1) is positively correlated with performance at a later point in time (T_2), the correlation is not statistically significant. However, performance at T_1 is significantly correlated with satisfaction at T_2, providing support for the Porter-Lawler model.

Theories and research on student attrition generally assume that performance causes satisfaction. For example, Tinto's (1975) model of the factors influencing student attrition assumes that performance (as measured by grades) directly influences satisfaction (represented by institutional commitment) (Pascarella, Smart, & Ethington, 1986). Not surprisingly, studies using various forms of Tinto's model have found that performance and satisfaction are significantly related (Aitken, 1982; Liu & Jung, 1980; Pascarella, Duby, Miller, & Rasher, 1981; Pascarella, Smart, Ethington, 1986; Terenzini & Pascarella, 1977). The preceeding discussion is not meant to imply that the assumed relationship between performance and satisfaction is invalid, only that it remains largely untested.

Like organizational research on performance and satisfaction, studies in the academic arena have been criticized because they rely on correlational methods and measure performance and satisfaction at the same point in time. Along these lines, Howard and Maxwell (1980, 1982) note that correlations between performance and satisfaction may be the product of a third variable, such as teaching effectiveness or student motivation. Support for this position can be seen in the fact that the significant correlation between performance and satisfaction disappears when student motivation is included in the model. Howard and Maxwell also used a longitudinal model to evaluate the relationship between performance and satisfaction. In their research on

grades and students' evaluations of teachers, these researchers found that the influence of satisfaction measured at T_1 on performance measured at T_2 is somewhat greater than the influence performance measured at T_1 has on satisfaction measured at T_2.

Bean and Bradley (1986) employed nonrecursive structural equation models to identify reciprocal relationships between performance and satisfaction when these variables were measured simultaneously. Using two-stage least squares regression to overcome problems by an overidentified model, these researchers found that satisfaction has a significantly greater impact on grades than grades have on satisfaction.

Using a model similar to the one developed by Bean and Bradley, Pike (1989) found that the influence of performance on satisfaction is statistically significant while the influence of satisfaction on performance is not significant. Moreover, the maximum likelihood estimate for the effect of satisfaction on grades is negative. These results are suspect because of the large positive correlation (.72) between the effect of performance on satisfaction and the residual for performance and because of the large negative correlation (-.80) between the effect of satisfaction on performance and the residual for performance.

In summary, the results of previous research on the performance-satisfaction relationship has important implications for the appropriateness of the assumption underlying most attrition research, namely that performance influences satisfaction. The studies by Bean and Bradley and by Howard and Maxwell indicate that satisfaction has a greater influence on performance than performance has on satisfaction. Only the research by Pike provides results

consistent with the performance-satisfaction relationship specified by models of attrition. Previous research also documents the need for longitudinal studies of the relationship between performance and satisfaction. Without multiple measures of these variables at different points in time, it is not possible to confidently say whether performance influences satisfaction or satisfaction influences performance.

None of the studies cited in this paper assume that the relationship between performance and satisfaction is independent of other aspects of a student's education. In fact, the research of Howard and Maxwell emphasizes the importance of including other variables in the model in order to determine if the relationship between performance and satisfaction is an artifact of these other variables.

Previous research has identified two general classes of variables that influence performance and satisfaction: students' precollege characteristics and their educational experiences. Regarding students' precollege characteristics, research has found that gender (Aitken, 1982; Endo & Harpel, 1982; Pascarella, Smart, & Ethington, 1986; Smith & Allen, 1984), race (Pascarella, Smart, & Ethington, 1986), high school grade point average (Baird, 1984; Bean & Bradley, 1986; Dawkins & Dawkins, 1980; Pascarella, Smart, & Ethington, 1986; Smith & Allen, 1984), and scores on college entrance examinations (Aitken, 1982; Baird, 1984; Donovan, 1984; Endo & Harpel, 1982) are among the most prominent factors influencing college grades. Both gender and race also have been found to influence students' satisfaction with their academic programs (Endo & Harpel, 1982; Pascarella, Smart, & Ethington, 1986).

One aspect of students' educational experiences that consistently influences both satisfaction and performance is their level of academic and/or social involvement (Bean & Bradley, 1986; Donovan, 1984; Morstain, 1977; Pascarella, Smart, & Ethington, 1986; Pike, 1989). The amount of faculty-student interaction is one subset of academic/social involvement that exerts a significant influence on performance and satisfaction (Aitken, 1982; Bean & Kuh, 1984; Morstain, 1977; Pascarella, 1980; Pascarella, Smart, & Ethington, 1986; Pike, 1989). While faculty-student interaction is an important subset of involvement, it is not the only one. Other factors, such as the amount of time spent on campus outside of class and attending campus cultural events (plays, films, and concerts) also influence performance and satisfaction (Pike, 1988).

A model based on research on the performance-satisfaction relationship and on the factors influencing performance and satisfaction is presented in Figure 1. As this model indicates, involvement, performance, and satisfaction are measured at two points in time. Within each time period, involvement variables are assumed to be intercorrelated and to influence both performance and satisfaction directly. In addition, performance and satisfaction are assumed to be intercorrelated.

Insert Figure 1 about here

According to the model, involvement, performance, and satisfaction variables measured at T_2 are directly influenced by involvement, performance, and satisfaction measured at T_1, as well as by students' precollege characteris-

tics. Furthermore, the involvement, performance, and satisfaction variables measured at T_1 indirectly influence performance and satisfaction at T_2, acting through involvement at T_2. Involvement at T_1 also indirectly influences performance and satisfaction at T_2 by acting on performance and satisfaction at T_1. Finally, students' precollege characteristics are assumed to be intercorrelated and to influence performance and satisfaction at T_1 and T_2 directly. Also, these precollege characteristics indirectly influence performance and satisfaction via their direct effects on all other variables in the model.

The model in Figure 1 provides two types of information that can be used to evaluate the performance-satisfaction relationship. First, the effects coefficients for influence of satisfaction on performance and performance on satisfaction provide a test of the direction of the performance-satisfaction relationship. Second, the correlations between the residuals for performance and satisfaction, both at T_1 and T_2, provide an indication of whether the simple bivariate correlations between these two variables are an artifact of the effects of other variables. This model also provides useful information about the importance of students' precollege characteristics and levels of involvement as predictors of performance and satisfaction.

Methods

Subjects

The setting for this research is the University of Tennessee, Knoxville (UTK), the state's public research university. UTK has an enrollment of almost 20,000 undergraduate and 6000 graduate/professional students (University

of Tennessee Office of Management Services, 1987). The campus-wide assessment program at UTK gathers data about students from a variety of opinion surveys, student records, and tests of learning in general education and in the major (Pike & Banta, 1987).

During the winter quarter of 1987, approximately 2000 students were mailed a student satisfaction survey designed to measure student opinions about programs and services at the university and department levels, as well as classroom experiences (Van Liere & Lyons, 1986). The response rate for this survey was 63% (Office of Institutional Research, 1987).

During the 1987-88 academic year slightly more than 1800 seniors took a required test of general education knowledge and skills. At the end of the testing period, students completed a survey containing many of the items on the student satisfaction survey that deal with opinions about programs and services at the university.

Combining these two data sets produced a sample of 314 students who completed both the student satisfaction survey as juniors in 1987 and also completed the senior survey in 1988. The combined data then were matched with student records to obtain additional data on students' precollege characteristics.

Of the students in the sample, 53% were male and 95% were white. The mean grade point average for these students when they were in high school is 3.33 (S_x = .48), and their mean college entrance examination (ACT Assessment) score is 22.76 (S_x = 4.64). The mean grade point average of these students as college juniors is 3.02 (S_x = .73), and as college seniors it is 2.97 (S_x = .79).

An examination of the intercorrelations among precollege characteristics reveals that students' scores on the ACT Assessment exam are significantly correlated with gender (.215, $p < .001$), race (.176, $p < .01$), and high school grade point average (.457, $p < .001$). These results indicate that males, whites and students who were successful in high school perform better on the ACT Assessment exam than do females, blacks, and students who were less successful in high school. Gender, race, and high school grade point average are not significiantly intercorrelated.

Instruments

As the preceding discussion indicates, four precollege characteristics are included in this research (gender, race, high school GPA, and ACT scores), and data for all four variables were obtained from student records. Gender is scored so that a 1 represents a male and a 0 represents a female. Similarly, a 1 for race represents a white student and a 0 represents a black student.

Data for the involvement and satisfaction variables were obtained from opinion surveys, and performance data were obtained from student records. Three involvement variables were used in this research: campus involvement, cultural involvement, and faculty-student interaction. Campus involvement is represented by the number of hours per week each student spends on campus outside of class, and cultural involvement is the number of times students attend campus plays, films, and concerts. Faculty involvement refers to the number of faculty members students know well enough to ask for a letter of recommendation.

In the present study, satisfaction refers to whether students are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied with their academic experiences at UTK. The satisfaction measure was scored so that a higher score represents a higher level of academic satisfaction.

Data Analysis

In order to evaluate the performance-satisfaction relationships specified in the research, all measures were intercorrelated and the correlation matrix was analzed using the LISREL VI computer program (Joreskog & Sorbom, 1986). Because all variables were directly measured and the model was exactly identified, the model represented a perfect fit to the data. As a result, the maximum likelihood estimates produced by LISREL are similar to standardized regression coefficients. The primary difference between maximum likelihood estimates and standardized regression coefficients is that LISREL calculates maximum likelihood coefficients based on the assumption that residuals are correlated (Joreskog & Sorbom, 1986).

Data analysis was a two-step process. The first step involved analyzing the relationships among students' precollege characteristics and T_1 measures. This phase of the data analysis parallels Howard & Maxwell's (1980) study and represents a test of whether the precollege characteristics and the involvement measures included in the model are sufficient to explain the relationship between performance and satisfaction.

In the second phase of the research, data for T_2 measures were included in the model, making it possible to determine the direction of the performance-satisfaction relationships. In addition, the presence of significant

relationships between performance and satisfaction from T_1 to T_2 indicates that precollege characteristics and involvement variables are not sufficient, by themselves, to explain students' performance and their satisfaction at T_2.

Results

Phase I

Table 1 presents the maximum likelihood estimates representing the effects of precollege characteristics on involvement, performance, and satisfaction measured at T_1, maximum likelihood estimates for the effects of involvement variables on performance and satisfaction. Asterisks (*) are used to denote statistically significant relationships.

Insert Table 1 about here

An examination of the effects for students' precollege characteristics reveals that both gender and ACT scores significantly influence involvement, but not performance or satisfaction. Gender is negatively related to cultural involvement (-.193), while ACT scores are positively related to cultural involvement (.172) and negatively related to faculty-student contact. These results indicate that students with higher ACT scores are more likely to attend cultural events, but less likely to interact with faculty. Women, however, are more likely than men to attend cultural events.

Both race and high school grade point average are significantly related to involvement and performance measures, but not to satisfaction. Race is negatively related to general campus involvement (-.177) and to cultural in-

volvement (-.117), while high school GPA is positively related to faculty-student interaction (.119). These results indicate that white students are less likely to spend time on campus and to attend campus cultural events than are blacks, and students with higher high school grade point averages are more likely to have contact with faculty than are students with lower grade point averages. Both race and high school grade point average are positively related to college grades, indicating that whites and students who perform well in high school are likely to perform well in college. An examination of the indirect effects for precollege characteristics reveals that these effects are minor.

Results for the effects of involvement on performance and satisfaction indicate that faculty student contact is positively related to both performance (.180) and satisfaction (.220). No other involvement variable is significantly related to either performance or satisfaction.

Table 2 presents the residuals for involvement, performance, and satisfaction variables measured at T_1. An examination of these residuals (on the diagonal) reveals that a substantial amount of the variance in the involvement, performance, and satisfaction variables remains unexplained. An analysis of the correlations among these measures indicates that the residual for campus involvement is significantly correlated with the residual for cultural involvement (.108), and the residual for cultural involvement is significantly correlated with faculty-student contact (.111).

Insert Table 2 about here

The result for the correlation between the residuals for performance and satisfaction indicates that these variables are significantly correlated (.098), even after controlling for the effects of precollege characteristics and involvement variables. While the correlation between the residuals is substantially less than the simple bivariate correlation between performance and satisfaction ($r = .174$, $p < .01$), it is significant nonetheless.

Phase II

In the second part of the research, T_2 variables were included in the model. Table 3 presents the maximum likelihood coefficients for the effects of precollege characteristics and T_1 variables on involvement, performance, and satisfaction measured at T_2. In addition, this table contains the coefficients representing the effects of T_2 involvement variables on performance and satisfaction, also measured at T_2.

Insert Table 3 about here

An examination of the effects coefficients for students' precollege characteristics indicates that race exerts a significant positive influence on both performance (.107) and satisfaction (.119). These results suggest that white students have higher grades and are more satisfied with their academic experiences than are black students. The absence of significant racial ef-

fects for involvement variables may be due to the extremely strong effects of involvement at T_1 on involvement at T_2. In addition, students' ACT scores are positively related to performance (.134), as is high school grade point average (.319). High school grade point average also is positively related to both campus involvement and faculty-student contact (.104 and .155 respectively).

An important finding concerning the effects of involvement, performance, and satisfaction at T_1 on the same variables at T_2 is that variables measured at T_1 are strongly related to their counterparts at T_2. Specifically, campus involvement influences campus involvement (.635), cultural involvement influences cultural involvement (.698), faculty-student contact influences faculty-student contact (.428), performance influences performance (.355), and satisfaction influences satisfaction (.381).

The results presented in Table 3 also indicate that satisfaction at T_1 exerts a significant influence on performance at T_2 (.151), but performance at T_1 does not significantly influence satisfaction at T_2 (.031). Of the involvement variables measured at T_2, only cultural involvement is significantly related to satisfaction at T_2 (.169). None of the involvement variables is significantly related to performance.

An examination of the residuals and the correlations among the residuals presented in Table 4 reveals that a substantial proportion of the variance in T_2 measures remains unexplained. In addition, residuals for campus involvement and cultural involvement are significantly correlated (-.071), as are the residuals for cultural involvement and faculty-student contact (.101). Most

important, the correlation between residuals for performance and satisfaction, while positive, is not significant (.040).

Insert Table 4 about here

Discussion

The results of the present research can be summarized as follows:

(1) Analysis of the T_1 data indicates that a substantial proportion of the covariance in performance and satisfaction scores can be explained by the influence of other variables. Of the involvement variables included in the model, faculty-student contact has the greatest influence on both satisfaction and performance.

(2) Results of the longitudinal analysis indicate that the best predictors of the involvement, performance, and satisfaction variables measured at T_2 are those same variables measured at T_1. Specifically, campus involvement influences campus involvement, cultural involvement influences cultural involvement, faculty-student contact influences faculty-student contact, performance influences performance, and satisfaction influences satisfaction.

(3) An examination of the data pertaining to the relationship between performance and satisfaction reveals that satisfaction measured at T_1 is significantly related to performance

at T_2. However, performance at T_1 is not significantly related to satisfaction at T_2. These results suggest that satisfaction influences performance, but that performance does not influence satisfaction.

Before dealing with the implications of these findings, it is important to consider the limitations inherent in this study. The most obvious limitation on the generalizability of these results is the fact that data are drawn from only one institution. Generalizing these results to all colleges and universities, or even to public research universities, is problematic. Future research should focus on the nature of the performance-satisfaction relationship at a wide variety of institutions and should seek to identify differences in this relationship by institutional type.

A second limitation concerns the involvement variables included in this analysis. Obviously, involvement can include a variety of phenomena, not just campus involvement, cultural involvement, and faculty-student contact. Moreover, involvement is only one aspect of students' educational experiences. Future research should include a wider variety of involvement variables and other types of educational experiences.

The third factor limiting the generalizability of these results is the use of a single measure to represent each variable. While many of the measures, such as academic satisfaction and grade point average, are typical of much of the performance-satisfaction research, the fact remains that the use of a single measure limits the generalizability of findings. To improve the reliability with which these components are measured and to help identify latent (underlying) variables that would lend themselves to generalization,

future research should rely on multiple measures of each component in the model.

Despite these limitations, the findings of the present research do have important implications for the nature of the relationship between performance and satisfaction, as well as for attempts to improve the performance and/or satisfaction of college students. It suggests that a substantial part, and perhaps most, of the consistently observed relationship between performance and satisfaction is due to other variables, such as faculty-student contact. Efforts to improve student performance and satisfaction, whether as ends themselves or as means to reduce attrition and improve persistence, should carefully identify the factors influencing performance and satisfaction and focus attention on those factors with the greatest potential for influencing performance and satisfaction.

The fact that the longitudinal analysis used in this study indicates that the strongest predictor of performance is previous performance (and the strongest predictor of satisfaction is previous satisfaction) underscores the importance of beginning intervention efforts early in a student's career. This conclusion is further underscored by the fact that the best predictor of involvement is previous involvement. If a student has a long history of low involvement, poor performance, and dissatisfaction, it seems unlikely that intervention strategies will have much effect.

To the extent that there is a unique relationship between performance and satisfaction that cannot be explained by other factors, and this research strongly suggests that such a relationship does exist, the results of this study, as well as studies at other institutions, clearly indicate that the

relationship operates in one direction: Satisfaction influences performance, but performance does not influence satisfaction.

Despite the growing evidence that performance does not influence satisfaction, the most popular model used in attribution/persistence research is designed in such a way as to assume that performance/grades cause satisfaction. This is not to suggest that Tinto's model should be abandoned. However, some of the relationships in this model do need to be reevaluated, and the practice of using grades as a measure of academic integration (and satisfaction as a measure of institutional commitment) needs to be reexamined.

Conclusion

It may seem strange to some that a management theory, such as the human relation perspective, that has been discredited in most organizational settings should be so appropriate for higher education. Nevertheless, the findings of this research, as well as research on the relationship between performance and satisfaction at other colleges and universities, clearly indicate that a human relations model is appropriate for higher education.

At this point it is worth remembering that Lawler and Porter argue that satisfaction does affect performance when satisfaction is related to the value of the rewards being given. Few of us would care to argue with the proposition that students' satisfaction with an institution influences the value they place on grades from that institution.

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Table 1

Maximum Likelihood Estimates for the Relationships Among Precollege Characteristics, Involvement, Performance, and Satisfaction Variables Measured at Time$_1$

	Campus	Culture	Faculty	Perfor-mance	Satis-faction
Gender	.056	-.193***	-.036	-.081	-.061
Race	-.177**	-.117*	-.039	.140*	.038
HS GPA	.020	-.104	.119*	.311***	.040
ACT	.101	.172**	-.135*	.043	.095
Campus				-.005	-.091
Culture				.064	-.097
Faculty				.180***	.220***
R^2	.043	.053	.025	.117	.076

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 2

Residuals and Correlations Among Residuals for the Involvement, Performance, and Satisfaction Variables Measured at Time 1

	Campus	Culture	Faculty	Performance	Satisfaction
Campus	.957***				
Culture	.108*	.947***			
Faculty	.025	.111*	.957***		
Performance				.823***	
Satisfaction				.098*	.823

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3

Maximum Likelihood Estimates for the Relationships Among Precollege Characteristics, Involvement, Performance, and Satisfaction Variables Measured at Both $Time_1$ and $Time_2$

	Campus	Culture	Faculty	Performance	Satisfaction
Gender	.050	-.013	.012	-.012	-.078
Race	-.054	-.052	.033	.107*	.119*
HS GPA	.104*	-.050	.155**	.319***	-.001
ACT	.008	.070	-.064	.134*	-.015
Campus	.635***	.096*	.110*	-.010	.057
Culture	.036	.698***	.041	.110*	-.157*
Faculty	.046	.050	.428	-.008	.011
Performance	-.115*	.005	-.069	.355***	.031
Satisfaction	.103*	.024	.090	.151***	.381***
Campus				.061	-.042
Culture				-.037	.169**
Faculty				.019	.033
R^2	.457	.544	.240	.474	.202

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4

Residuals and Correlations Among the Residuals for the Involvement, Performance, and Satisfaction Variables Measured at $Time_1$ and $Time_2$

	Campus	Culture	Faculty	Performance	Satisfaction
Campus	.543***				
Culture	-.071*	.456***			
Faculty	-.045	.101	.760***		
Performance				.526***	
Satisfaction				.040	.798***

* P < .05; * p < .01; * p< .001

Figure 1

Model of the Relationships Among Precollege Characteristics, Involvement, Performance, and Satisfaction Variables at Two Points in Time